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Elements.

By Mr. E. Vogel, of Mr. Bishop's Observatory, South Villa, Regent's Park.

	° ′ ″	
M	321 13 12·08	1852, Sept. 10·0 Greenwich M.T.
π	30 23 29·12	Mean Equinox,
☊	211 35 25·26	Jan. 0.0, 1852
i	1 32 13·13	
φ	9 3 55·67	
Log e	9·1974538	
Log a	0·3875506	
Log μ	2·9686807	μ = 930″·423642

These elements, which are deduced from the observations at South Villa, August 22; at Greenwich, Aug. 30; and at South Villa, Sept. 8, exactly represent the middle observation.*

MELPOMENE.

Discovered by Mr. J. R. Hind, at the South Villa Observatory.

"On June 24th, at 12^h 30^m mean time, I remarked an object resembling a star of the 9th magnitude in a part of the heavens in 18^h R.A., which, from previous acquaintance with the vicinity, I was satisfied must be a new planet, the other members of the group between *Mars* and *Jupiter* all occupying different positions. Observations with the wire-micrometer indicated a sensible change of R.A. in 15^m. The Astronomer Royal having been requested by Mr. Bishop to name the newly discovered planet, has called it *Melpomene.* I remarked on the first night, and on several subsequent occasions, a strong yellowish colour about the light of this object, quite different from the appearance of the telescopic stars in the same field of view."

"The following are the positions of *Melpomene*, resulting from observations with the wire-micrometer. The comparison-stars up to July 3 have been observed by Mr. Airy, who has kindly favoured me with the resulting mean places which have been used in my reductions:"—

1852.	Green. M.T. h m s	App. R.A. ° ′ ″	App. N.P.D. ° ′ ″
June 24	12 50 19 7	18 12 59·92	98 15 52·0
	13 17 45·4	58·80	54·7
	14 3 28·0	56·67	58·2
26	10 16 29·0	18 11 0·94	98 20 57·6
29	10 11 45·5	18 7 52·23	98 30 0·1

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* Mr. Vogel sent at the same time an approximate Ephemeris from Sept. 14 to Oct. 14, which is omitted here, as being out of date. The Editor fears that the blame of delay on this occasion rests with him, but the Ephemerides not contained in the *Nautical Almanac* are to be found in the *Astronomische Nachrichten.*

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1852.	Green. M.T.	App. R.A.	App. N.P.D.
	h m s	° ′ ″	° ′ ″
June 30	10 16 23·4	18 6 49·05	98 33 33·2
July 2	11 3 31·6	18 4 42·43	98 40 51·9
3	11 46 11·6	18 3 38·89	98 44 53·9
9	11 4 47·2	17 57 42·50	99 11 41·1
	11 7 43·7	42·38	45·8
30	9 10 59·8	17 42 45·66	101 21 0·4

Liverpool. Equatoreal. (Mr. Hartnup.)

1852.	Green. M.T.	R.A.	Log $\frac{p}{P}$	N.P.D.	Log $\frac{q}{P}$	Star of Comparison.
	h m s	h m s		° ′ ″		
Aug. 25	9 14 19·4	17 43 25·41	+8·224	104 34 21·5	−9·9594	B.A.C. 5976
	9 39 16·4	25·70	8·317	31·5	9·9558	— —
31	8 34 5·9	17 46 46·15	8·128	105 17 51·8	9·9637	— —
	8 58 3·2	46·55	8·242	55·3	9·9608	— —
Sept. 1	8 50 47·6	17 47 26·75	8·226	105 25 6·0	9·9616	— —
	9 14 45·0	27·08	8·316	12·6	9·9580	— —
2	8 9 37·8	17 48 7·30	8·015	105 31 53·9	9·9660	— —
	8 33 35·1	7·70	8·161	62·9	9·9641	— —
16	7 50 15·4	18 0 53·81	8·159	107 4 33·4	9·9677	— 6086
	8 5 14·1	54·78	+8·229	36·4	−9·9657	— —

Assumed *Mean* Places of the Stars for 1852·0.

	R.A.	N.P.D.	Authority.
	h m s	° ′ ″	
B.A.C. 5976	17 33 5·92	102 47 28·1	Greenwich Observations.
— 6086	17 52 47·22	107 8 46·2	Greenwich 12-yr. Catalogue.

Haverhill. (W. Boreham).

1852.	Green. M.T.	R A.	Log P	N.P.D.	Log *p*	No. of Obs.	
	h m s	h m s		° ′ ″			
June 29	10 18 14	18 7 50·58	−8·6185	98 30 11·9	−0·8722	9	*a*
30	10 36 36	6 48·72	8·5677	33 32·3	0·8722	9	*a*
July 3	10 58 33	3 40·75	8·3954	44 58·1	0·8775	9	*b*
4	10 36 28·4	2 40·21	8·7175	48 58·2	0·8733	10	*b*
5	10 22 46·5	1 39·79	8·7747	53 12·2	0·8737	10	*b*
6	10 20 57·8	18 0 40·20	8·7848	98 57 28·7	0·8736	10	*c*
7	10 46 7	17 59 39·55	8·1607	99 2 1·5	0·8736	7	*d*
8	10 22 52	58 41·73	−8·7119	6 38·5	0·8716	10	*d*
9	10 55 44·4	57 42·61	+8·1903	11 39·5	0·8753	10	*d*
11	10 10 14·3	55 51·58	−8·6311	21 42·2	0·8757	5	*d*
12	10 41 34·5	54 56·08	+8·3533	27 0·5	0·8765	10	*e*
21	10 32 57	47 43·25	+8·8387	100 20 21·8	0·8782	10	*f*
22	10 44 52	17 47 2·03	+8·9868	100 26 52·5	−0·8784	10	*g*

$\frac{P}{\Delta}$ and $\frac{p}{\Delta}$ = parallax in R.A. and N.P.D. respectively in seconds of time and arc, Δ being the distance of the planet from the earth. The observations are already corrected for refraction.

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Assumed *Mean* Places of the Stars compared with the Planet.

		R.A.	N.P.D.
	h	h m s	° ′ ″
a	Weisse, XVIII, 147	18 7 27·42	98 31 44·5
b	— — 61	18 3 56·15	98 45 39·1
c	— — 7	18 1 36·57	98 47 30·5
d	— XVII, 1212	17 57 37·31	99 16 8·1
e	B.A.C. 6078	17 50 52·88	99 45 2·3
f	Weisse, XVII, 980	17 48 16·69	100 9 38·2
g	— — 906	17 45 0·85	100 19 52·4

HAMBURG. (M. C. Rümker.)

	Hamburg M.T.	R.A.	Parx.	Decl.	Parx.	Comps.	
1852.	h m s	° ′ ″	″	° ′ ″	″		
June 28	12 7 31·8	272 12 50·7	+0·5	−8 27 5·3	+4·9	10	
30	10 16 50·5	271 42 43·4	−1·3	33 24·1	4·9	3	
July 2	12 42 27·7	271 10 1·8	+1·5	41 1·9	4·9	15	
3	12 0 24·3	270 54 58·0	+0·8	44 52·4	4·9	19	
4	10 26 39·1	270 40 40·4	−1·0	48 44·1	4·9	9	
	11 10 21·9	25 3·2		50·9	6·1		Mer. Circle
5	10 20 16·3	270 25 27·1	−1·0	52 53·5	4·9	14	
	11 5 25·8	25 3·2		5·8	6·1		Mer. Circle
6	11 0 30·0	270 10 2·0	...	8 57 26·8	6·1		— —
7	10 55 34·9	269 55 12·2	...	9 2 1·0	6·1		— —
8	10 50 40·8	269 40 36·4	...	6 41·7	6·1		— —
9	10 45 47·1	269 26 8·8	...	11 29·8	6·0		— —
10	10 40 55·0	269 12 3·5	...	......	...		— —
11	10 36 3·5	268 58 6·8	...	21 36·7	6·0		— —
12	10 31 13·7	268 44 27·7	...	26 53·1	6·0		— —
14	10 21 37·6	268 18 4·0	...	37 50·3	6·0		— —
15	10 16 49·0	268 5 14·3	...	43 28·1	6·0		— —
16	10 12 3·7	267 52 52·5	...	49 15·4	6·0		— —
17	10 7 19·4	267 40 43·4	...	9 55 9·6	6·0		— —
20	9 53 16·8	267 6 54·0	...	10 13 36·1	6·0		— —
22	9 44 2·7	266 46 17·9	...	26 16·9	6·0		— —
23	9 39 27·9	266 36 35·4	...	32 49·9	5·9		— —
24	9 34 55·4	266 27 21·5	...	39 23·8	5·9		— —
25	10 40 53·0	266 18 9·2	+1·2	46 32·8	4·6	14	
26	9 25 54·9	266 10 9·4		10 52 57·0	5·9		Mer. Circle
	10 20 15·5	9 56·0	1·2	10 53 12·0	4·5	13	— —
28	9 17 2·4	265 54 56·4		11 6 50·0	5·9		Mer. Circle
29	9 12 38·8	265 48 1·5		13 41·4	5·9		— —
30	9 18 17·2	265 41 33·8		20 55·9	5·8		— —
	10 18 29·9	41 27·8	+1·2	21 4·5	4·5	6	
Aug. 1	8 59 39·8	265 30 8·3		−11 35 8·3	+5·8		Mer. Circle

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1852.		Hamburg M.T.	R.A.	Parx.	Decl.	Parx	Comps.
		h m s	° ′ ″	″	° ′ ″	″	
Aug.	2	10 26 42·6	265 25 0·6	+1·5	−11 42 44·2	+4·4	4
	4	9 28 39·9	265 16 30·4	0·7	11 57 0·1	4·3	10
	7	9 11 42·4	265 7 32·4	0·6	12 19 5·4	4·0	4
	16	9 9 21·0	265 8 36·1	1·1	13 26 52·0	5·3	
	17	8 56 15·4	265 11 20·5	0·9	13 34 12·5	5·3	
Sept.	3	8 27 0·6	267 12 43·4	1·3	15 38 45·7	4·9	
	4	8 23 35·8	267 23 58·9	1·3	45 37·7	4·9	
	5	8 15 9·7	267 35 43·6	1·2	52 39·1	4·9	
	6	8 25 9·4	267 48 1·1	1·3	15 59 35·6	4·8	
	7	8 4 0·3	268 0 30·6	1·2	16 6 14·3	4·8	
	8	8 16 36·9	268 13 46·2	1·3	13 6·9	4·8	
	9	8 29 40·5	268 27 22·7	1·5	19 44·5	4·7	
	14	8 5 21·0	269 36 40·6	+1·4	−16 53 8·5	+4·7	

The parallax is not applied to the observations.

Mean Places for Jan. 0, 1852, of Stars which are near the geocentric path of *Melpomene*, by M. C. Rümker, from Meridian Observations.

Mag.	R.A.	Obs.	Decl.	Obs.	Mag.	R.A.	Obs.	Decl.	Obs.
	h m s		° ′ ″			h m s		° ′ ″	
9	17 30 14·67	2	−12 16 26·6	2	9	17 49 45·21	1	−9 18 8·9	1
9	33 41·05	1	13 51 36·8	1	9	52 12·48	3	9 29 51·0	3
9	36 0·45	1	12 8 15·1	1	9	54 8·92	1	10 29 56·0	1
8.9	36 8·41	2	12 58 29·0	2	8	55 46·87	2	9 15 4·2	1
9	37 25·07	4	11 30 42·8	4	8	56 17·00	1	9 15 46·4	1
8	37 39·83	2	10 17 17·2	2	9	57 2·76	1	9 34 49·2	1
8	37 59·51	2	13 14 35·4	2	8	57 37·31	4	9 16 3·1	3
8	38 0·31	1	13 14 24·0	1	8	17 59 26·76	5	9 11 25·2	5
8	40 28·15	2	10 12 54·8	2	8	18 1 36·18	3	8 47 30·4	3
9	40 50·35	3	11 17 4·0	1	7	3 56·23	2	8 45 31·4	2
8.9	41 14·70	2	10 42 53·7	2	9	5 37·23	1	9 54 24·1	1
8.9	41 34·70	2	10 25 17·0	2	10	6 13·84	1	8 43 50·5	1
9	42 5·91	2	12 6 40·9	1	9	6 19·71	1	8 11 42·5	1
8.9	43 51·56	2	9 56 3·6	2	8.9	7 26·91	7	8 31 42·0	7
7	44 50·10	2	10 51 29·6	2	8	10 3·35	2	8 41 4·8	2
8	45 1·10	1	10 19 43·0	1	9	12 3·64	1	8 36 24·3	1
7	45 52·94	4	11 18 4·7	2	9.10	13 22·72	7	8 20 45·8	7
7	48 16·47	1	10 19 42·2	1	6	18 25·16	1	8 15 57·8	1
9	17 48 20·11	1	−9 35 9·3	1	9	18 19 2·99	1	−8 57 39·4	1

Elements and ephemerides of *Melpomene* will be found in Nos. 818, 819, 820 of the *Ast. Nach.*

There is some error in the R.A. of the second observation of July 4.

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IRENE.

LIVERPOOL. Equatoreal. (Mr. Hartnup.)

1852.	Green. M.T.	R.A.	Log $\frac{p}{P}$	N.P.D.	Log $\frac{q}{P}$	Star of Comparison.
	h m s	h m s		° ′ ″		
Sept. 3	12 47 57·1	23 17 10·45	+7·343	109 1 28·7	−9·9778	B.A.C. 8062
	13 25 52·1	9·72	·960	35·9	·9757	— —
8	11 30 6·0	23 12 51·43	−7·886	109 29 40·9	−9·9774	— —
	11 54 2·0	50·63	·520	44·4	·9787	— —
9	11 17 19·4	23 11 59·30	−7·961	109 34 54·1	−9·9769	— —
	11 45 14·7	58·36	·608	60·7	·9787	— 8161

Assumed *Mean* Places of the Stars for 1852·0.

	R.A.	N.P.D.	Authority.
	h m s	° ′ ″	
B.A.C. 8062	23 1 32·99	111 58 27·2	B.A.C.
— 8161	23 18 16·10	111 27 6·8	—

HYGEIA.

Professor Chevallier has computed an ephemeris of *Hygeia* for its present opposition from the elements given in the *Berlin Jahrbuch* for 1854. This ephemeris has been printed by the Professor and distributed. There are some copies at the Royal Astronomical Society, which will be forwarded on application.

EUNOMIA.

HAMBURG. (M. C. Rümker.)

1852.	Hamburg M.T.	R.A.	Par^{x}.	Decl.	Par^{x}.	Obs.
	h m s	° ′ ″	″	° ′ ″		
July 16	13 29 33·2	47 37 20·2	−2·4	+28 30 47·5	+2·5	2
17	12 15 47·5	48 6 6·2	2·2	28 39 29·6	2·8	7
23	12 42 14·4	51 3 26·1	2·5	29 35 43·3	2·7	8
24	11 56 1·4	51 31 50·4	−2·3	29 44 9·0	+2·9	11
			Log Fact. Par^{x}.		Log Fact. Par^{x}.	
Oct. 9	9 50 18·7	79 54 29·7	−9·8722	36 54 40·9	+9·8225	6
12	9 25 55·1	80 17 54·8	9·8703	37 12 26·3	9·8362	6
16	9 5 11·8	80 41 18·5	−9·8695	+37 11 36·1	+9·8418	6

Apparent Places of the Stars of Comparison.

	R.A.	Decl.		R.A.	Decl.
	h m s	° ′ ″		h m s	° ′ ″
Oct. 9	5 20 10·0	+37 12 24·2	Oct. 16	5 20 10·3	+37 12 24·6
12	5 22 24·1	+37 12 50·2		5 22 24·3	+37 12 50·5

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Elements. By M. George Rümker.

Epoch, August 21.0, 1851.

	° ′ ″	
M .... =	314 4 38·39	Jan. 0.0, 1852, Berlin M.T.
π	28 11 58·00	Mean Equinox, Jan. 0.0, 1852.
☊	293 54 48·29	
i	11 43 56·47	
ϕ	10 47 29·24	

Log a = 0·4214854 ; μ = 827″·52.

These elements were computed from the following observations.

Berlin M.T.	App. R.A.	App. Decl.	Observations.
1851.	° ′ ″	° ′ ″	
Aug. 21.0	271 54 37·48	−24 25 32·18	8 Camb. 1 Berlin
Oct. 20.0	282 43 53·77	20 45 55·20	1 Camb. 3 Berlin 2 Hamb. 5 Wash.
1852.			
Jan. 9.0	316 17 9·35	−11 49 2·48	4 Wash.

The elements represent the middle observation thus :—
Calculated—Observed = +0·″11 in long. ; −0·″06 in lat.

From the above elements, M. George Rümker computed an ephemeris* from July 1 to Nov. 7, taking into account the perturbations caused by *Jupiter*, according to the elegant and convenient formulæ given by Dr. Brünnow, *Ast. Nach.* 808.

THETIS.

Markree. Large Equatoreal and Square Micrometer. E. J. Cooper, Esq., and Mr. Graham.

Green. M.T.	R.A.		Decl.			
1852.	h m s		° ′ ″			
May 24·482979	11 58 18·27	+ [9·4045] : Δ	+8 8 10·1	+ [0·8047] : Δ	*a*	5
·482979	18·36	9·4045	10·4	0·8047	*a*	5
·501960	58 18·91	9·4452	8 5·9	0·8092	*b*	5
·501960	18·93	9·4452	5·5	0·8092	*b*	5
25·468457	11 58 41·96	9·3729	+8 3 19·8	0·8024	*c*	5
·468457	42·13	9·3729	20·6	0·8024	*c*	5
·490160	58 42·61	9·4263	3 13·8	0·8073	*c*	5
·490160	42·51	+ [9·4263] : Δ	14·4	+ [0·8073] : Δ	*c*	5

Coefficients for parallax logarithmic. Δ = distance from the earth.

Adopted *Mean* Places for 1852·0, of Compared Stars, with reductions to apparent places at the times of observation, and authorities.

	h m s	s	° ′ ″	″	
Weisse, 973	11 56 43·86	+0·63	+8 13 30·83	−1·65	*a*
— 971	56 43·00	0·63	13 58·13	−1·65	*b*
— 968	11 56 33·65	+0·62	+8 0 38·49	−1·65	*c*

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* This ephemeris is omitted, as being out of date at the time of publishing this Number ; it will be found with other ephemerides in the *Ast. Nach.* There is an ephemeris up to Dec. 31 in No. 832.